

# Full Tendon Transposition Augmented with Posterior Intermuscular Suture and Recession - Resection Surgery

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**Purpose:** To report an effect of the full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery, for the patient with monocular elevation deficiency (MED) and large exotropia.

**Methods:** Interventional case report. Full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery was performed for a 26-year-old male patient had monocular elevation deficiency (MED) and large exotropia.

**Results:** Preoperative angle of deviation was 56 prism diopters (PD) hypotropia and 45 PD right exotropia, compared with 18 PD left hypertropia and 10 PD right esotropia postoperatively. Esotropia persisted after 2.5 years, however, and so the right medial rectus was recessed after removal of the previous posterior intermuscular suture. At a three-year follow-up after the second surgery, alignment was straight in the primary position at near and far distances.

**Conclusions:** Full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery was effective for a patient with MED associated with significant horizontal deviation, and a second operation was easily performed when overcorrection occurred. *Korean Journal of Ophthalmology* 20(4):254-255, 2006

**Key Words:** Full tendon transposition, Monocular elevation deficiency, Posterior intermuscular suture

Monocular elevation deficiency (MED) is a syndrome characterized by unilaterally impaired upgaze above the midline. About 60% of patients with MED have associated significant horizontal deviation that necessitates multiple extraocular muscle surgery or normal fellow eye surgery.<sup>1-3</sup> However, these interventions carry a risk of serious complications such as anterior segment ischemia following multiple extraocular muscle surgery, and many patients refuse operation on their normal eye.

Full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery effectively corrected a patient with MED associated with significant horizontal deviation. Additionally, the second recession surgery was easily performed when overcorrection occurred.

## Case Report

A 26-year-old male patient had MED and large exotropia from birth, and a marked limitation of supraduction in the affected eye. He had no significant medical or ophthalmic history of prior trauma. An examination revealed best corrected visual acuities of 20/40 in his right eye and 20/20 in his left eye. Preoperative angle of deviation was 56 prism diopters (PD) hypotropia and 45 PD exotropia of the right eye (Fig. 1a).

The intraoperative force duction test was negative. The full tendon transposition of horizontal recti muscles to superior rectus muscle parallel to the spiral of Tillaux was performed after lateral rectus muscle recession 9.0 mm and medial rectus muscle resection 5.0 mm (Fig. 1b). The transposed horizontal recti muscles were augmented with a posterior intermuscular suture as we previously described.<sup>4</sup> Briefly, the posterior augmentation consisted of a 5-0 non-absorbable polyester suture with a T-5 spatulated needle (Dacron; Ethicon) that was placed through 25% of the belly of each transposed and paralytic rectus muscle at 7 mm posterior from the original muscle insertion. Postoperative angle of deviation improved to 18 PD hypertropia of the left eye and 10 PD esotropia of the right eye (Fig. 1a). Binocular single visual fields improved to 65° from 0°.

Received: July 30, 2006 Accepted: November 15, 2006

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\* This manuscript was presented as a poster at the 91st Meeting of the Korean Ophthalmological Society, Busan, Korea, April 23-24, 2004.

\* Authors do not have any financial conflict of interest in the subject matter in this manuscript.

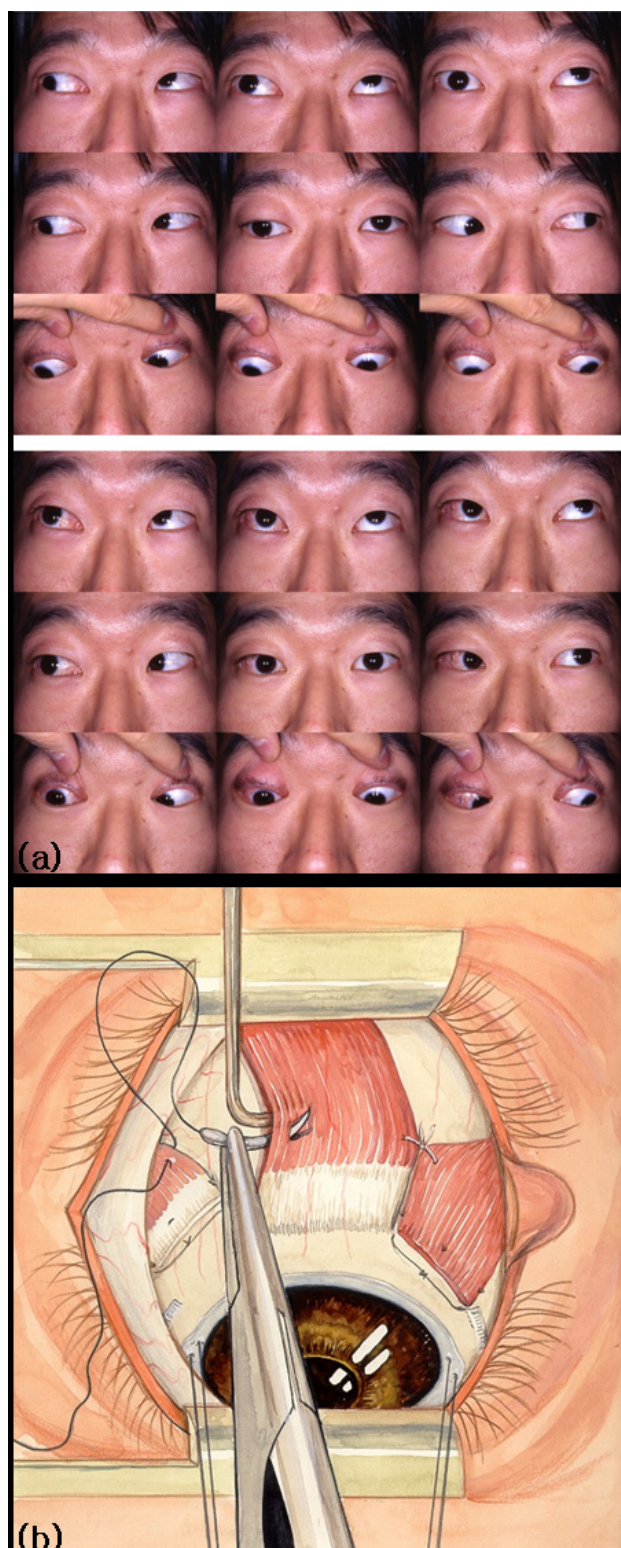


Fig. 1. (a) Photograph of a patient with monocular elevation deficiency associated with significant exotropia. Preoperatively 56 PD right hypotropia and 45 PD right exotropia (Top). Postoperatively 18 PD left hypertropia and 10 PD right esotropia (Bottom). (b) Treatment of the condition with full tendon transposition augmented with posterior intermuscular suture and right lateral rectus muscle recession-right medial rectus muscle resection.

10 PD esotropia of the right eye persisted after 2.5 years, leading the patient to complain about the cosmetic problem. Accordingly, the right medial rectus was recessed 5.0 mm from the spiral of Tillaux after removal of the posterior intermuscular suture. At a three-year follow-up, alignment was straight in the primary position at near and far distances. There were no complications such as anterior segment ischemia during the surgery and postoperative follow-up.

## Discussion

Surgery is indicated in MED if there is vertical deviation in the primary gaze, deviation causing suppression and amblyopia, diplopia in the primary gaze, and contracted binocular fields. In patients with MED associated with a significant horizontal deviation, multiple extraocular muscle surgery or normal fellow eye surgery are generally necessary.<sup>1-3</sup> Most patients or their parents, however, do not allow surgery in the normal fellow eye, and surgery on the multiple extraocular muscles may cause anterior segment ischemia.

Full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery can effectively correct patients with MED associated with significant horizontal deviation, while reducing the risk of anterior segment ischemia and avoiding an operation on the normal eye. Additionally, the intermuscular suture can be easily removed even when a second operation is needed.

In this case report, full tendon transposition augmented with posterior intermuscular suture and recession-resection surgery was an effective and safe procedure in a patient with MED associated with significant horizontal deviation. Additionally, the second recession surgery was easily performed when overcorrection was occurred.

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